

H1-B Visa Data Analysis using PySpark

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Abstract— This study is all about the H1-B visa applications filed between 2015 to 2021. H1-B category of visa is one of the types of visas issued by USA government, to attain a work permit. In recent days, this visa gained limelight as controversial visa due to its limitations and as these visas are issued based on lottery and no one has any clue if they would get it or not. This report highlights the findings from the analysis performed on data collected from Data.gov. And try to examine if there is any pattern or qualifications that are to be met to attain good success rate for the visa approval. During this analysis, an extensive use of Spark has been done for the coding, data pre-processing and data visualization phases. All the work has been done using the Zeppelin Notebook. We have also used SQL query language to get some anticipated inferences from the data. All the processed data and the results have been stored into Mongo DB database. The result of this analysis can be used to identify the role and location with the high H1-B success rate which will help people understand the basic dynamics and criteria the visa issuances.

Keywords—*H1-B, Immigrants, Visa category, Work permit, USCIS.*

I. INTRODUCTION

The United States of America is well known as the country of immigrants and the technological hub for the world. Visa is the document of authorization on a travel permit that grants the holder permission to travel to depart from or remain in the United States for a specific amount of time. Depending on the country one wishes to go to, there are different types of foreigner visas, desirable structures, and employee visa approaches. Like citizens of the US, all the immigrants need a status to work in the United States like H1B, L1, L2, B1, B2, F1, F2, H4 visa types. The US H1-B visa is a non-immigrant visa that enables US organizations to employ graduate degree workers in unique occupations that call for speculative or specialized flair, particularly in fields like IT, finance, bookkeeping, design, designing, design, arithmetic, technology, medicine, and so forth.

This is one of the most popular visa categories on which the multinational companies frequently need people with unique abilities would bank on this category for various activities like development of IT, R&D, and other unique areas that have an impact on the US economy. This has made it difficult for US installation firms to hire foreign talent, and as a result, the processing time for H1-B visa requests has increased significantly. Making the decision to go to America is difficult and important. The U.S. South America provides many instructions for settler visas, including H1B, L1 and J1 and others. An outside national must be supported by a USA situation related, a U.S. legal permanent resident, or a purposeful enterprise, with several distinct situations, to be eligible to apply for an employment visa. With the help of recording a hobby for the distant inhabitant's benefit utilizing U.S. Residency and Colonization Facilities, the assistance initiates the motion technique (USCIS). A substantial portion of this H-1B is significantly late starting because of manufacturers' lack of petitions and faulty equipment for obtaining approval. In America, the H1B visa falls under the Immigration and Nationality Act (INA). empowers American managers to fire workers at disproportionate rates and who can "identify the electricity trades." H-1B is a business-based, entirely non-temporary visa accumulation for transient foreign workers inside the US. For a foreign country to apply for an H1B visa, a US company must offer employment and submit an H-1B visa application to the American motion office. This is the most well-known visa designation associated with and held by well-known understudy when they complete their schooling and begin working a full-time job. The Office of Foreign Labor Certification (OFLC) produces application data that provides useful information on the mobility packages, including the H1-B visa.

II. PROBLEM STATEMENT

The main problem is to find the aspects that impact the approval of the H1-B visas to the working class of US immigrants.

III. ALL ABOUT THE DATA:

Data from the employer's Labor Condition Application and case certification decisions handled by the Office of Foreign Labor Certification were used for this study (OFLC). To hire non-immigrant employees for a particular job activity, an H1B business must submit a Labor Condition Application (LCA) to the U.S. Department of Labor Employment and Training Administration (DOLETA). The Department of Labor's website (*Labor, n.d.*) is where the information is obtained.

The dataset spans the years 2015 through 2021 and includes 39 columns with a total of 5 million records. Case status, employer name, SOC name, job title, full-time position, prevailing salary, year, jobsite, and latitude and longitude data are among the pertinent columns in the dataset. A sample of the information gathered is shown below.

A	B	C	D	E	F	G	H	I	J	K	L
CASE_NUM	CASE_STA	CASE_SUBMITTED	DECISION_DATE	VISA_CLASS	EMPLOYMENT_S	EMPLOYMENT_E	EMPLOYEE	EMPLOYEE	EMPLOYEE	EMPLOYEE	EMPLOYEE
I-200-0951	WITHDRAWN	2/5/2015	2/5/2015	H-1B	2/9/2015	2/28/2015	MEDTRON 710 MEDTRONIC PARKMINNEAPOLIS MN				
I-200-0951	CERTIFIED	12/17/2014	12/18/2014	H-1B	1/5/2015	1/4/2015	UNIVERSITY OF MICHIGAN BLDG NORMAN OK				
I-200-0951	WITHDRAWN	1/2/2015	12/15/2014	H-1B	1/1/2015	1/6/2015	NOKIA INC 6002 CONNECTION DR LIVING TX				
I-200-0951	CERTIFIED	3/10/2015	3/16/2015	H-1B	9/1/2015	9/1/2015	OMRON C-9510 N. HOUSTON RD HOUSTON TX				
I-200-0951	CERTIFIED	12/17/2014	12/23/2014	H-1B	6/8/2015	8/5/2015	FEDERAL I-8250 JOHN MSAJE MCLEAN VA				
I-200-0951	WITHDRAWN	1/22/2015	1/22/2015	H-1B	1/29/2015	1/29/2015	APLARS, 11 2885 CUL ST. 175 LITTLE CAUN				
I-200-0951	CERTIFIED	10/14/2014	10/20/2014	H-1B	1/13/2015	1/13/2015	VNWARE, 3401 HILLVIEW AVE PALO ALTO CA				
I-200-0951	CERTIFIED	12/17/2014	12/23/2014	H-1B	6/14/2015	6/13/2015	FEDERAL I-8250 JOHN MSAJE MCLEAN VA				
I-200-0951	CERTIFIED	10/25/2014	11/4/2014	H-1B	11/17/2014	11/16/2014	VNWARE, 3401 HILLVIEW AVE PALO ALTO CA				
I-200-0951	DENIED	3/19/2015	3/30/2015	H-1B	9/17/2015	9/17/2015	IMAX TR 45 CRESTA NONE SUWANEE GA				
I-200-0951	CERTIFIED	10/22/2014	10/28/2014	H-1B	4/23/2015	4/22/2015	VNWARE, 3401 HILLVIEW AVE PALO ALTO CA				
I-200-0951	DENIED	1/22/2015	1/29/2015	H-1B	1/22/2015	1/22/2015	LHB, INC. 21 WEST S SUITE 500 DULUTH MN				
I-200-0951	DENIED	3/20/2015	3/31/2015	H-1B	8/20/2015	8/20/2015	INTERNAT 1110 ELDE SUITE 201 HERNDON VA				
I-200-0951	CERTIFIED	10/22/2014	10/28/2014	H-1B	11/10/2014	11/9/2014	VNWARE, 3401 HILLVIEW AVE PALO ALTO CA				
I-200-0951	CERTIFIED	10/24/2014	10/30/2014	H-1B	10/24/2014	10/23/2014	IT CATS LL 388 WASH SUITE A SAINTRELLILU				
I-200-0951	CERTIFIED	10/20/2014	11/4/2014	H-1B	2/3/2015	2/2/2015	VNWARE, 3401 HILLVIEW AVE PALO ALTO CA				
I-200-0951	CERTIFIED	2/2/2015	10/29/2014	H-1B	4/25/2015	4/25/2015	VF CORPO 105 CORPORATE CEN GREENSBORO NC				
I-200-0951	CERTIFIED	12/19/2014	12/29/2014	H-1B	6/16/2015	6/15/2015	FEDERAL I-8250 JOHN MSAJE MCLEAN VA				
I-200-0951	WITHDRAWN	10/13/2014	10/13/2014	H-1B	10/13/2014	10/12/2014	LANDRY'S 1510 WEST LOOP SDR HOUSTON TX				
I-200-0951	WITHDRAWN	10/13/2014	10/13/2014	H-1B	10/13/2014	10/12/2014	LANDRY'S 1510 WEST LOOP SDR HOUSTON TX				
I-200-0951	CERTIFIED	12/18/2014	12/24/2014	H-1B	1/1/2015	1/1/2015	PARSONS 1100 WEST WALNUT S PASADENA CA				
I-200-0951	CERTIFIED	1/4/2015	1/21/2015	H-1B	5/13/2015	9/13/2015	DELPHI CE 5725 DELPHI DRIVE TROY MI				
I-200-0951	WITHDRAWN	10/13/2014	10/13/2014	H-1B	10/13/2014	10/12/2014	DAIRY INC 3333 S. BASSETT RD ENGLEWOOD CO				
I-200-0951	CERTIFIED	2/12/2015	1/19/2015	H-1B	2/12/2015	9/21/2015	INTEGRATE 4 ETHE RD SUITE 401 DORON NJ				
I-200-0951	CERTIFIED	6/17/2013	1/26/2015	H-1B	6/19/2013	6/19/2016	XPRT TEC 205 HOUSE AVENUE CAMP HILL PA				
I-200-0951	CERTIFIED	2/13/2015	2/22/2015	H-1B	3/4/2015	3/3/2015	ISR INFO V 559 D'ONOFRIO DR MADISON WI				
I-200-0951	CERTIFIED	12/19/2014	12/26/2014	H-1B	6/18/2015	6/17/2015	FEDERAL I-8250 JOHN MSAJE MCLEAN VA				

Figure 1: Data snippet

IV. PROJECT LITERATURE:

The significance and complexity of the U.S. H-1B visa system cannot be overstated. It offers a big channel for high-level mobility and is the largest professional traveler visa software in the United States. It enables employers to assign odd individuals to certain roles that may be open. It has greatly benefited the IT industry, and exceptional areas have used it to strengthen the power of their paintings by combining clinical services, technology, and money. But in April, shortly after the U.S. Citizenship and Immigration Services (USCIS) announced the results of its annual lottery for selecting H-1B visas (it had received 199,000 petitions for the available 85,000 visas), President Trump issued a top

request to put H-1B and comparable obligations under new scrutiny. Known as "Buy American and Rent American," it advises government enterprises to determine whether current arrangements give adequate thought to American devices and persons. The request is the most recent development in a protracted discussion over how businesses use the H-1B software and what its approach is for American specialists. Whether or if businesses use this mechanism to hire rare experts for lesser pay, displacing Americans from those positions, is a common aspect of the debate. Recognize the following as the main points of this discussion: One degree focuses on the extensive usage of H-1B visas because of rethinking firms; the other focuses on the debate over whether or if this tool expands organizations' admission to insufficient abilities or really aids them in containing costs. H-1B visas are granted through a commercial enterprise-driven system, which implies employers apply for special job-related visas with the public authority. These could be referred to as "power professions," which are prevalent in fields including time, design, evidence-based innovation, medicines, and business and often need four to twelve months of certification (or the equivalent). However, it is normal that it can hardly speak and is not strictly (if with the useful resource of use of any technique). There is also assessment that it opens wonderful provisos that companies can misuse. Organizations must certify that they won't pay an H-1B expert brief of what they may an American, and that H1B employees won't have "antagonistic effect on the operating conditions" of the various specialists.

V. PROBLEM DATASET INVESTIGATION

As the initial step for the Dataset investigation, we followed a sequence of steps starting from the collection of data till the building the machine learning model.

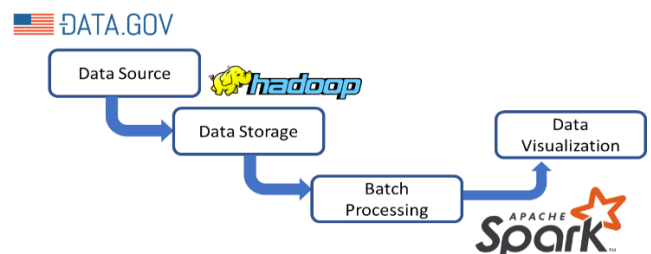


Figure 2: System Architecture

Data Preprocessing:

As the data is real time and is collected from an official government website, majority of the data is clean and does not contain any null values. Some minor cleanings like column renaming are performed.

Data Analysis and Outcomes:

To address the main problem statement of the project, some of the analysis based on the available date i.e., data that is collected from the government website for the years 2015 to 2021. Below are some of the descriptions.

- Total Applications filed per year:

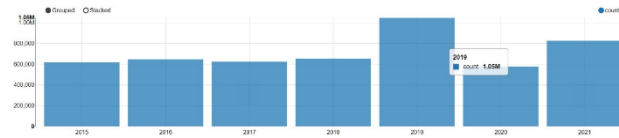


Figure 3: Total Applications filed per year

From the above figure, we could say that the total number of applications totally filed were the highest in the year 2019. In the year 2020, we could see that there is a downfall in the number of applications. This may be due to the COVID-19 pandemic. Later in 2021, there is a rise in the applications filed for H1-B.

- H1-B Acceptance Rate:



Figure 4: H1-B Acceptance Rate

The above pie charts show us the H1-B acceptance rate from the applications received in all the years. From 2015 to 2018, the acceptance rate i.e., certified rate was almost the same but from 2019, we could see that the certified rate has been reduced drastically which shows that there are some external factors like COVID pandemic and political impact which caused this reduction.

- Visa classification Analysis:

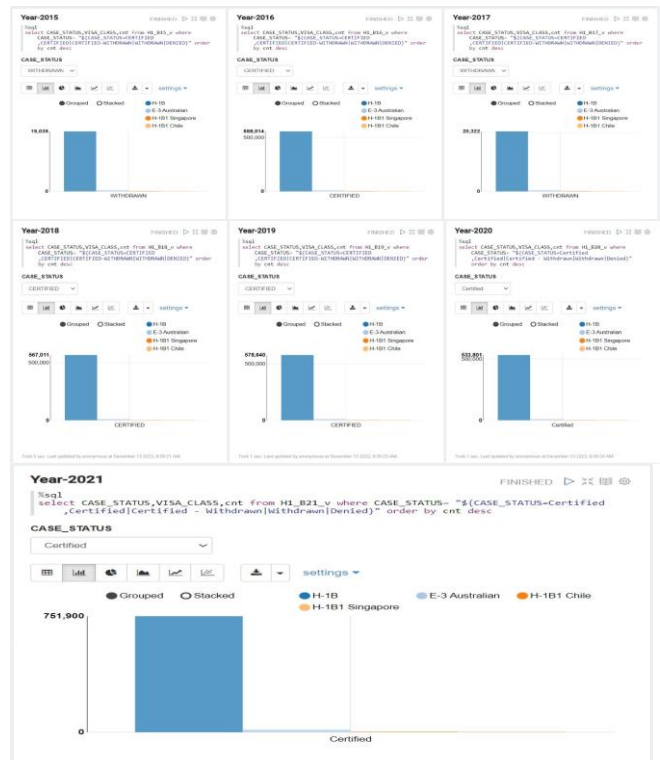


Figure 5: Visa classification Analysis

In all the work permit visa categories that fall in the umbrella of H1-B are H-1B1 Chile, E-3 Australian, H-1B, H-1B1 Singapore. Out of all the categories, the highest number of applications filed were H1-B applications and the number has been gradually increased with the years.

- Employer – Visa Acceptance Analysis:



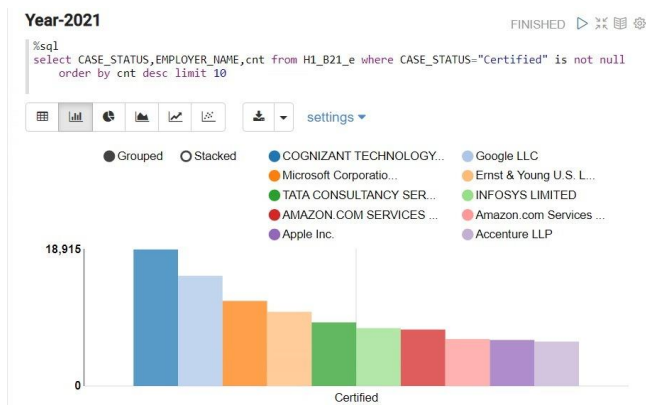


Figure 6 Visa Acceptance rate based on Employer

The above charts clearly show us the change in statistics during the years, initially Infosys had high success rate during 2015 to 2017, Later Deloitte took over the position in 2018. In recent days Cognizant have high success rate.

- Employer – Visa Denial Analysis:



Figure 7: Employer - Visa Denial Analysis

The total number of applications denied belong to IBM in the year 2015. Later in 2016 to 2018, Deloitte

employees had to face the same scenario. In the past few years, Google, HCL, Coforge employees are struggling to get the visa acceptance.

- Visa Acceptance – State wise Analysis:

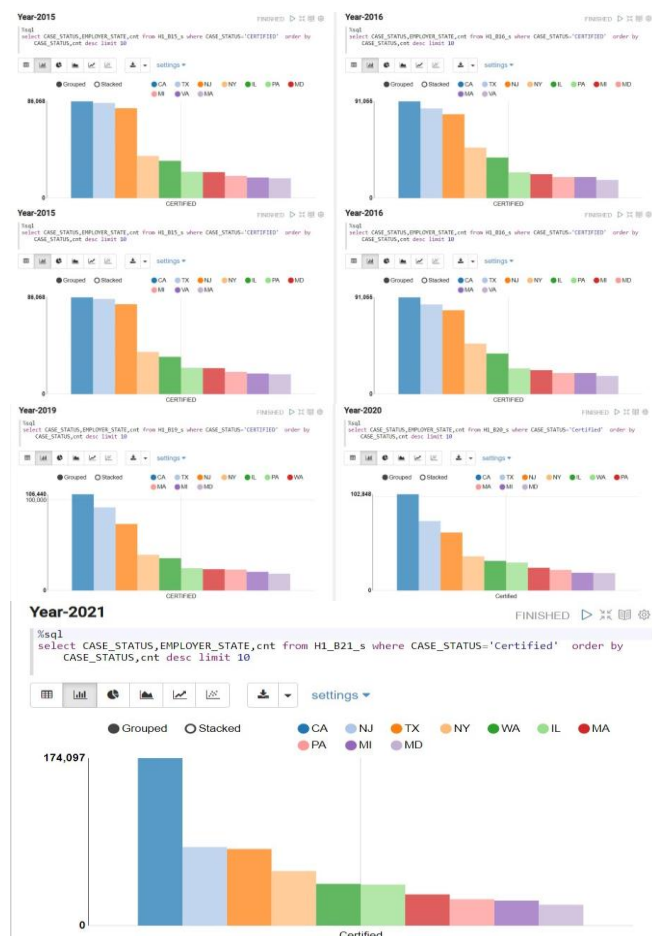


Figure 8: Visa Acceptance - State wise Analysis

From the above bar graphs, we can observe that the states California, New Jersey, and Texas stood first in the total number of visa application acceptances. This stood true for all the years from 2015 to 2021. States such as WA, IL, PA, MD, MA and VA had optimally good acceptance rate during these years.

- Visa Denial – State wise Analysis:





Figure 9: Visa Denial - State wise Analysis

Same as the Visa acceptance, the states California, New York and Texas also had the highest rate of visa denials. This depicts that these states are the most busy states in terms of work permits.

- Employer – Country wise Acceptance Analysis:



Figure 10: Employer - Country wise Visa Acceptance Analysis

From the above graph, most of the applicants' employers have their major existence in the United

States of America. The same results have been obtained for visa denials also.

- Employer – Country wise Denial Analysis:

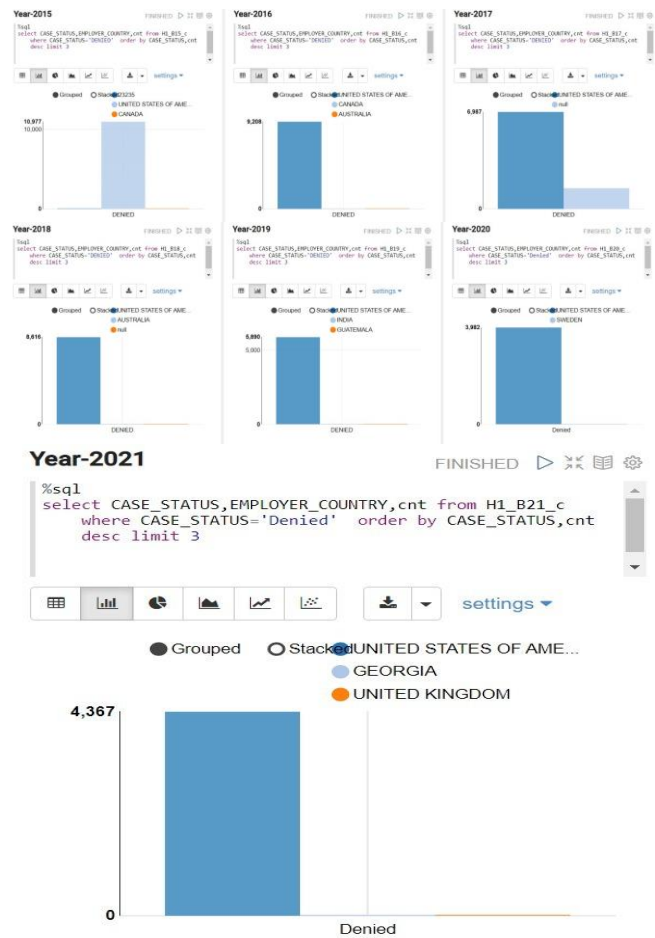
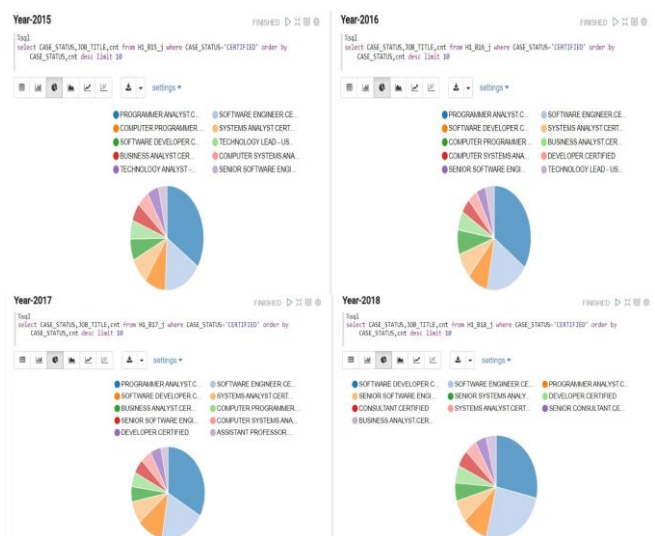


Figure 11: Employer - Country wise Denial Analysis

- Visa Acceptance based on Job Titles:



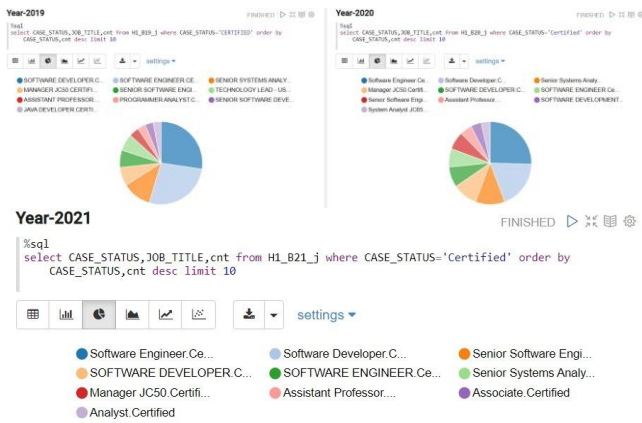


Figure 12: Visa Acceptance based on the Job Title

From all the analysis, we could find that most of the visas were accepted for the employees from IT industry with various job titles.

- Visa Rejection based on Job Titles:

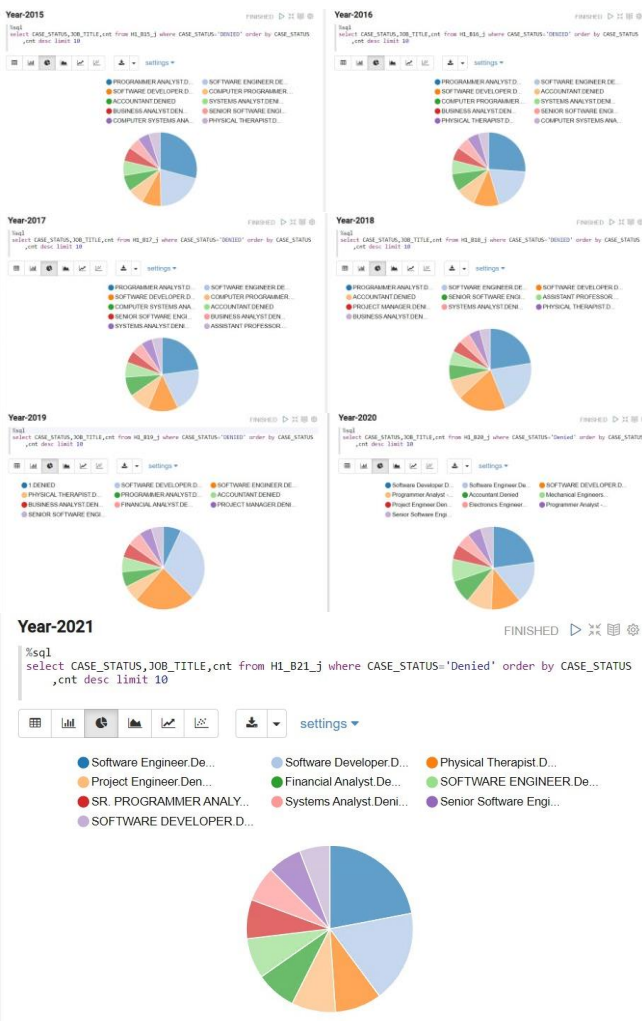


Figure 13: Visa Rejection based on Job Titles

For the applicants who do not have the title engineer in their job titles have the most rejections. This shows that most of the required immigrants should have engineering as their skillset.

- Visa Acceptance based on Payroll:



Figure 14: Visa Acceptance based on Payroll

As per the analysis, most of the applicants that received H1-B visas are the yearly contract-based employees rather than monthly, bi-weekly or hourly based employees.

- Ideal Case - Location and Position:

DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
3/17/2016	Year	CERTIFIED	TX	COMPUTER PROGRAMMER	703
3/10/2016	Year	CERTIFIED	NY	SOFTWARE ENGINEER	661
3/17/2016	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	642
7/7/2016	Year	CERTIFIED	NY	SOFTWARE ENGINEER 2	603
3/24/2016	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	579
3/29/2016	Year	CERTIFIED	MD	DEVELOPER	546
7/6/2016	Year	CERTIFIED	MD	SOFTWARE ENGINEER 2	534
3/16/2016	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	502
DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
3/23/2017	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	695
3/23/2017	Year	CERTIFIED	TX	PROGRAMMER ANALYST	619
3/30/2017	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	574
3/16/2017	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	367
3/30/2017	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	335
3/23/2017	Year	CERTIFIED	CA	PROGRAMMER ANALYST	335
3/23/2017	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	333
DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
3/15/2018	Year	CERTIFIED	MD	ENGINEER	588
2/1/2018	Year	CERTIFIED	TX	SENIOR SYSTEMS ANALYST JC50	414
1/31/2018	Year	CERTIFIED	TX	SENIOR SYSTEMS ANALYST JC50	372
1/30/2018	Year	CERTIFIED	TX	SENIOR SYSTEMS ANALYST JC50	351
3/8/2018	Year	CERTIFIED	MD	DEVELOPER	328
3/2/2018	Year	CERTIFIED	MD	DEVELOPER	328
DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
3/21/2019 22:36	Year	CERTIFIED	TX	TECHNOLOGY LEAD - US - PRACTITIONER	622
26/2019 22:00	Year	CERTIFIED	NJ	SOFTWARE DEVELOPERS, APPLICATIONS	334
3/21/2019 22:57	Year	CERTIFIED	TX	TECHNOLOGY LEAD - US - PRACTITIONER	328
2/18/2019 22:30	Year	CERTIFIED	TX	SENIOR SYSTEMS ANALYST JC50	273
2/25/2019 22:30	Year	CERTIFIED	TX	SENIOR SYSTEMS ANALYST JC50	269
DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
5/21/2020	Year	Certified	MD	Architect	521
10/3/2019	Year	Certified	TX	SENIOR SYSTEMS ANALYST JC50	401
4/3/2020	Year	Certified	TX	Senior Associate JC50 - SQA Engineers and Testers	317
10/3/2019	Year	Certified	TX	MANAGER JC50	276
10/25/2019	Year	Certified	TX	Senior Systems Analyst JC50	225
5/21/2020	Year	Certified	MD	Analyst	201
1/5/2019	Year	Certified	TX	Senior Systems Analyst JC50	153
DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
10/15/2020	Year	Certified	CA	Software Engineer	365
4/23/2021	Year	Certified	MD	Architect	323
10/15/2020	Year	Certified	TX	Software Developer	317
10/15/2020	Year	Certified	CA	Programmer Analyst - II	309
12/21/2020	Year	Certified	TX	Senior Systems Analyst JC50	285
12/17/2020	Year	Certified	TX	Senior Systems Analyst JC50	261
2/12/2021	Year	Certified	WA	Software Engineer	244
10/15/2020	Year	Certified	TX	Manager JC50	243

DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
3/26/2015	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	788
3/18/2015	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	708
3/18/2015	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	662
2/22/2015	Year	CERTIFIED	TX	TECHNOLOGY ANALYST - US	570
2/22/2015	Year	CERTIFIED	TX	SYSTEMS ENGINEER - US	562
2/13/2015	Year	CERTIFIED	TX	TECHNOLOGY ANALYST - US	487
2/23/2015	Year	CERTIFIED	TX	TECHNOLOGY ANALYST - US	481
3/25/2015	Year	CERTIFIED	NJ	PROGRAMMER ANALYST	469

Figure 15: Ideal Situation of Visa Success

With the help of the above analysis, an applicant who has their job title as Software Engineer and who belong to California state has the highest success rate of getting certified for the H1-B visa category.

- Situation with least Visa Acceptance:

DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
3/16/2015	Year	DENIED	NJ	SOFTWARE ENGINEER	31
1/7/2015	Year	DENIED	TX	SR. SYSTEMS ANALYST - JOB	19
3/13/2015	Year	DENIED	NJ	PROGRAMMER ANALYST	17
3/13/2015	Year	DENIED	NJ	SOFTWARE ENGINEER	15
3/11/2015	Year	DENIED	CA	SOFTWARE ENGINEER	13
3/31/2015	Year	DENIED	VA	PROGRAMMER ANALYST	11
3/19/2015	Year	DENIED	CA	SOFTWARE ENGINEER	9

DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
3/4/2016	Year	DENIED	NJ	PROGRAMMER ANALYST	9
3/23/2016	Year	DENIED	TX	PROGRAMMER ANALYST	7
2/13/2016	Year	DENIED	MI	PROGRAMMER ANALYST	6
3/23/2016	Year	DENIED	VA	PROGRAMMER ANALYST	6
2/8/2016	Year	DENIED	GA	DIAGNOSTIC RADIOLOGY RESIDENT	6
2/8/2016	Year	DENIED	NY	MEDICAL RESIDENT	6
3/28/2016	Year	DENIED	TX	PROGRAMMER ANALYST	6

DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
9/25/2017	Year	DENIED	NJ	MANAGEMENT ANALYSTS	18
2/28/2017	Year	DENIED	IL	COMPUTER PROGRAMMER	17
9/22/2017	Year	DENIED	NJ	MANAGEMENT ANALYSTS	15
8/15/2017	Year	DENIED	WA	SOFTWARE ENGINEER	13
8/14/2017	Year	DENIED	WA	SOFTWARE ENGINEER	10
3/1/2017	Year	DENIED	IL	COMPUTER PROGRAMMER	9
3/24/2017	Year	DENIED	GA	COMPUTER SYSTEMS ANALYST	7

DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
12/27/2017	Year	DENIED	NY	PROGRAMMER ANALYST	27
12/27/2017	Year	DENIED	FL	PROGRAMMER ANALYST	26
12/27/2017	Year	DENIED	MA	PROGRAMMER ANALYST	24
12/28/2017	Year	DENIED	CO	PROGRAMMER ANALYST	21
12/27/2017	Year	DENIED	UT	PROGRAMMER ANALYST	20
12/27/2017	Year	DENIED	CA	PROGRAMMER ANALYST	18
12/28/2017	Year	DENIED	CA	PROGRAMMER ANALYST	15
4/3/2018	Hour	DENIED	UT	AIRLINE PILOT	15

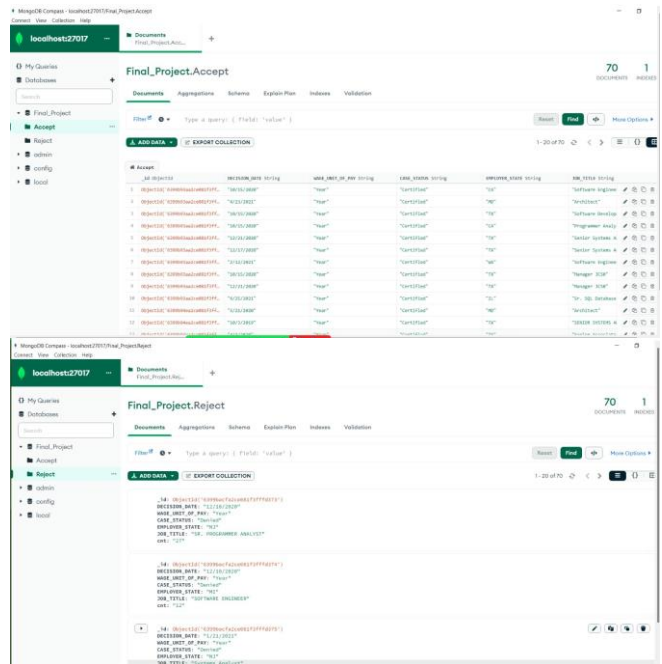
DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
5/31/2019 8:03	Year	DENIED	NJ	COMPUTER SYSTEMS ANALYSTS	2
4/20/2019 17:27	Year	DENIED	MN	TECHNICAL ENGINEER	2
3/26/2019 13:51	Year	DENIED	NJ	BUSINESS ANALYST	2
10/2/2018	Year	DENIED	WA	SOFTWARE DEVELOPER	2
2/1/2019 11:34	Year	DENIED	IL	BUSINESS ANALYST 4	2
5/16/2019 8:08	Year	DENIED	CA	LEAD TECHNOLOGIST	1
10/29/2018 10:35:50	Year	DENIED	PA	SENIOR CONSULTANT	1

DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
6/6/2020	Year	Denied	CA	Programmer Analyst - II	18
6/16/2020	Year	Denied	CA	Mechanical Engineers - II	16
6/15/2020	Year	Denied	CA	Programmer Analyst - II	14
3/25/2020	Year	Denied	CA	Programmer Analyst	12
1/31/2020	Year	Denied	FL	Graduate Physician Trainee	11
6/19/2020	Year	Denied	CA	Mechanical Engineers - II	11
6/19/2020	Year	Denied	CA	Electronics Engineers - I	11
6/16/2020	Year	Denied	CA	Electronics Engineers - II	11

DECISION_DATE	WAGE_UNIT_OF_PAY	CASE_STATUS	EMPLOYER_STATE	JOB_TITLE	cnt
12/10/2020	Year	Denied	NJ	SR. PROGRAMMER ANALYST	27
12/10/2020	Year	Denied	MI	SOFTWARE ENGINEER	12
12/1/2021	Year	Denied	NJ	Systems Analyst	10
11/20/2020	Hour	Denied	GA	SR SOFTWARE DEVELOPER	9
10/8/2020	Year	Denied	TX	ELEMENTARY BILINGUAL TEACHER	9
11/20/2020	Hour	Denied	FL	Financial Analyst	9
11/3/2020	Year	Denied	NJ	Java Developer	9

Figure 16: Least Acceptance Rate

- Final Output – MongoDB Integration:



All the outputs have been stored into MongoDB database using Mongo connectors like MongoDB Compass.

VI. CONCLUSION:

After all the Data Analysis, we could conclude that there are various factors that impact the acceptance rate of H1-B visas which has gathered prominence for itself in the recent years. Some of them are Job Title, employment state, employer, wage – unit of pay. In the analysis, we could also observe that there is a huge change in the demographics in the years 2019 and 2020 as the result of COVID-19 pandemic, political reforms in the H1-B norms that are confidential in nature. Engineer is one of the fascinating words for which the acceptance rate has been more. Most of the applications whose job title ended with engineer have had the highest acceptance. As said earlier, US is the technology hub. As a result, most of the immigrants that come to US for work might have engineer in their job title to get their H1-B visa approved.

VII. REFERENCES

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